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tude for a great deal of detailed information on the attributes of consciousness, whether the information is due to their realism or not.

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COMPARATIVE PSYCHOLOGY: A QUESTION OF DEFINITIONS¹

ACCIDENTALLY, rather than by the deliberate intent of any psychologist or group of psychologists, the term comparative psychology has come to mean the study of mind in organisms other than man. The writer wishes to urge against this usage the fact that the adjective comparative refers rather to the method of a science than to its materials. Witness comparative anatomy, embryology, pathology, physiology. The comparative anatomist is quite as much concerned with the structure of man as with that of the ape, or frog, or sea-urchin.

It seems wholly desirable, therefore, that we discard the present usage of comparative psychology and employ the term to designate the study of consciousness, behavior, or the products of behavior—no matter what the type of organism concerned—by the method of comparison. From the standpoint of this definition no special group of psychological facts is more amenable to comparison than another. In fact, comparative psychology studies alike, for the purpose of obtaining detailed genetic descriptions, the facts of the psychology of man in the various stages of development and degrees of normality; of other animals; of plants; of minor social groups, peoples, and races.

May we not with profit modify our usage of genetic, animal, and comparative psychology in accordance with the following suggestions? In spite of the fact that man is an animal, we may feel justified in contrasting the psychology of man with the psychology of animals. But surely it is preferable to be explicit whenever possible by referring to the genus or species of organism studied. Thus, to be consistent, we should speak of the psychology of ape, of dog, of elephant, of whale, or of octopus, as we speak of that of man. Similarly, although we may conveniently use the term plant psychology—or better the psychology of plants—whenever knowledge justifies it, we should designate the type studied.

As for genetic psychology, no such special branch, division, or department of the science really exists. All psychologists are—or

¹ Being Contributions from the Psychopathic Hospital, Boston, Massachusetts, 1913.24 (*Bibliographical Note*: The previous P. H. Contribution, 1913.23, by Robert M. Yerkes, entitled "Comparative Psychology in Relation to Medicine," was submitted to *Boston Medical and Surgical Journal*, July 14, 1913).

should be—interested in the history of mind in the individual and in the race,—interested in genetic description. As it happens, this particular kind of description is obtained more readily and satisfactorily through the application of the comparative method than otherwise. It seems fair to say that the individual who is interested primarily in genetic descriptions of mental life should be considered a comparative psychologist.

Finally, although comparative psychology in its completeness necessarily deals with the materials of the psychology of infant, child, adult, whether the being be human or infra-human; of animal or plant—of normal and abnormal individuals; of social groups and of civilizations, there is no reason why specialists in the use of the comparative method should not be distinguished, and, if it seems necessary, labeled. Thus, the worker whose special interest is the genetic description of early development might be known as an ontogenetic psychologist, in contrast with the phylogenetic, whose chief interest is the racial history of mind. We should have also patho-psychologists and ethnic psychologists just as we have, on the basis of another kind of interest, physiological psychologists.

This note on definitions is written with the hope that it may help to carry into oblivion the use of comparative psychology as synonymous with "animal psychology," and bring about the substitution of the natural, logical usage which the terms comparative and psychology, when linked, suggest.

It is the practise of the writer, but he does not wish to urge this upon his fellow-psychologists, to designate as the psychology of the self the purely self-observational knowledge of mind; to reserve the term psychology for the general science—introspective and inspective—and to think and speak of comparative psychology as though it were inclusive of the behavioristic materials and methods, as well as of those of the older introspective psychology.

The general science of psychology is obviously taking into itself and attempting to assimilate the methods as well as the results of students of behavior. This is natural enough and wholly desirable if the physiologist does not care to claim his own within the realm of behavior. The opposite tendency or attempt, namely, that of the student of behavior,² to borrow the term psychology for his special field of science, seems to the writer wholly unjustifiable, for the reason that if we throw overboard, as Professor Watson does, the method of self-observation, together with everything that has been claimed to be distinctive of the psychologist's point of view and purpose, we should consider the science merely a fragment of physiology and

² Watson, John B., "Psychology as the Behaviorist Views It," *Psychol. Review*, 1913, 20: 158.

should frankly recognize and designate it as such. The writer believes that the same human behavior may be studied with profit, and to very different ends, by the physiologist or behaviorist and by the psychologist.

ROBERT M. YERKES.

REVIEWS AND ABSTRACTS OF LITERATURE

Man a Machine. JULIAN OFFRAY DE LA METTRIE. French-English: including Frederick the Great's "Eulogy" on La Mettrie, and extracts from La Mettrie's "The Natural History of the Soul." Philosophical and Historical Notes by Gertrude Carman Bussey. Chicago: The Open Court Publishing Company. 1912.

La Mettrie's "*L'Homme Machine*" was published in 1748 at Leyden, whither its author had fled from France after the publication of his "*Histoire Naturelle de l'Ame*." The appearance of "*L'Homme Machine*" brought Holland's hospitality to an end, and La Mettrie found refuge at Berlin as "court atheist" to Frederick the Great. "*L'Homme Machine*," one of the early products of the French Illumination, not only shocked the orthodox, but became the target for the shafts of the *illuminati*, condemned by those who were ready to adopt its ideas. Succeeding generations have been content to read it chiefly by title, and have therefore misconceived its thesis as a sort of crude automatism.

A true appreciation of the significance of "*Man a Machine*" is, of course, prejudiced by the title and a very natural misunderstanding of the connotation of *machine* in the eighteenth century. To-day machine is defined primarily as any instrument employed to transmit force or to modify its application: any apparatus for applying mechanical power. Other usages are regarded as figurative or analogical. In truth this definition is the result of a long process of specialization, which was itself the effect of the science of mechanics and a new age of machinery. In the seventeenth and eighteenth centuries machine was employed to designate any sort of device: a ship, a carriage, a pulpit, a bandbox, and not infrequently for the human body, even by the poets. Hamlet subscribed himself to Ophelia: "Thine evermore, most dear lady, while this machine is to him," and Wordsworth sang of his wife,

"And now I see with eye serene
The very pulse of the machine."

Quite similar was the French usage of the period. For La Mettrie the human machine or mechanism was not a thing of wheels and levers, still less of atom pounding on atom. He antedated both stereo-chemistry and the kinetic theory of heat. His materialism is a materialism which begins with *organized* matter. He is a biological philosopher.

La Mettrie was a physician, a pupil and disciple of the celebrated Boerhaave. He insists that the physician is the only one who is competent through observation and experience to speak with authority on the